

## **OPTICAL MIDPOINT POWER CONTROL AND EXTINCTION RATIO CONTROL OF A SEMICONDUCTOR LASER**

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### **Abstract of the Disclosure**

The present invention provides a method and apparatus, such as an integrated circuit, to control the optical midpoint power level and the extinction ratio of a semiconductor laser and maintain the optical midpoint power level and the extinction ratio substantially constant at corresponding predetermined levels. Apparatus  
10 embodiments include a semiconductor laser, a modulator, a photodetector, an optical midpoint controller, and an extinction ratio controller. The semiconductor laser is capable of transmitting an optical signal in response to a modulation current. The modulator is capable of providing the modulation current to the semiconductor laser, with the modulation current corresponding to an input data signal. The photodetector, which  
15 is optically coupled to the semiconductor laser, is capable of converting the optical signal into a photodetector current. In response to the photodetector current, the optical midpoint controller is capable of adjusting the forward bias current of the semiconductor laser, and the extinction ratio controller is capable of adjusting the modulation current provided by the modulator to the semiconductor laser, to respectively generate the optical  
20 signal having substantially a predetermined optical midpoint power level and a predetermined extinction ratio.